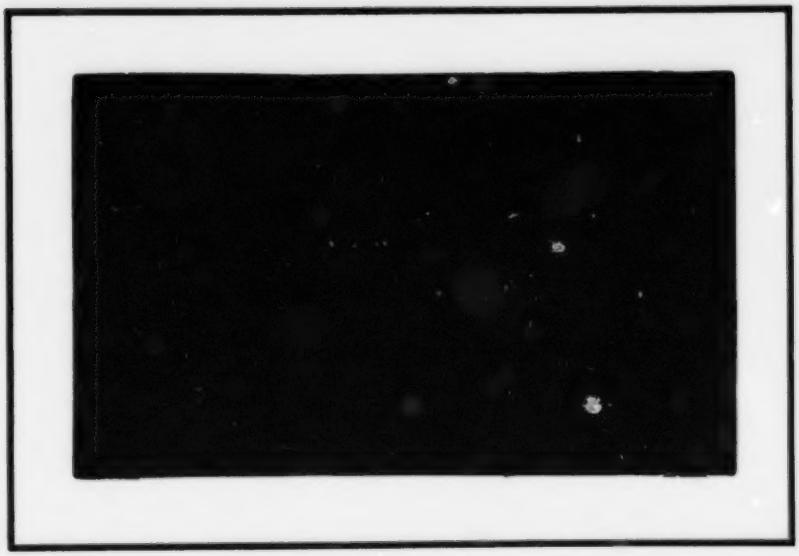

Administration

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DESIGN OF PROJECT MANAGEMENT SYSTEMS FROM TOP MANAGEMENT'S PERSPECTIVE*

by

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INTRODUCTION

The long-term survival of any organization is partly tied to its management's ability to develop and implement corporate strategies in tune with their ever changing environments. As a result, a major challenge for top managers is to institutionalize a process of constant organizational renewal through the implementation of project management methods which will maximize the proportion of successful projects under increasingly severe resource constraints. Meeting this challenge implies paying attention to project-related activities such as generation of an on-going stream of new project ideas, screening of project proposals, resource allocation decisions to projects, execution and control of projects, etc.

Project management refers to the methods and techniques created for the conception, analysis and implementation of temporary activities, highly irreversible and non-repetitive, under time constraints and with limited and scarce resources. Project management integrates those activities in a coherent fashion to guide an idea from its conceptual phase to its successful execution. In a broad sense project management is defined and applies equally to the construction of a hospital, as to the development of a new product or to the production of a play or a film. This definition is consistent with PMI's (see the PMBOK).

At least three reasons may explain why in an increasingly competitive and volatile environment, projects are of increasing strategic importance to the renewal and survival of any organization. First, the timing and successful implementation of projects can greatly enhance an organization's competitive situation. For instance, the reduction of the time required to bring a new product to

market can contribute to the erection of barriers to entry, alter the dynamics of competition and, in the end, determine the overall profitability of the project. Second, projects are net consumers of an organization's resources such as cash flow, people and equipment, which produce a return only when successfully implemented. The goal of any project management system is to transfer projects into stable operations which will eventually generate liquidity. However, there is always a consumption of resources which inevitably lowers the organization's financial mobility, at least temporarily. In such circumstances, only a superior authority can legitimate the transfers of resources and assume the associated risks. The expectation of senior managers is that projects become stable operations, a necessary condition to the recovery of the capital invested and to the release of profitability. Third, projects can involve significant changes to the infrastructure of an organization. Projects often require the destabilization of the existing order when they necessitate the destruction and restructuring of the internal workings of the organization. Projects are a source of deviance. They create tension and provoke the emergence of micro-cultures. Thus project implementation calls for skilled top management commitment and leadership, as well as for the existence and protection of project champions.

This paper is based on the analysis of interviews conducted with forty-four senior executives in thirty-nine organizations, complemented by a survey of managers in thirty-five firms. It begins with an overview of the major managerial implications associated with the management of a project as compared with the management of a portfolio of projects. The paper then identifies important project characteristics in the determination of appropriate management practices. Finally it concludes with the identification of key roles performed by top managers in relation to projects.

PROJECT MANAGEMENT vs PROJECT PORTFOLIO MANAGEMENT

Except in the case of small enterprises, top executives seldom function as project managers. Rather, they manage the organizational context within which others manage projects. In fact, the smaller projects in an organization never reach the attention of the higher levels of the hierarchy. Hence, the concept of project management does not carry the same meaning for a project manager as for the manager of project managers. This fundamental distinction stems from the fact that top managers are responsible for the successful management of their organization operations and at the same time of several projects, all at different stages of development. On the other hand, a project manager is the individual responsible for the success of a specific project.

Portfolio project management is of a higher order of magnitude than project management (see Table 1). The contrast in preoccupations can be seen in the following examples:

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Table 1

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Organizational level. In the organizations we surveyed, vice-presidents and division managers played the pivotal role with respect to project management practices. They are the key players at the top management level.

Key goals. The fundamental concern at the top management level is the renewal of the overall portfolio of projects. Senior executives are interested in maximizing the profitability of each project separately and, at the same time, maximizing the proportion of projects brought to a successful completion. At the project level success is measured on the basis of time, monetary cost and project performance.

Staffing. Top level managers are generally involved in the selection of the project manager who, in turn, will be responsible for the selection of the project team.

Planning tasks. The results from our survey indicate that top managers are frequently involved in the definition of project objectives, its broad articulation and in the control of the trajectory. The project manager, on the other hand, is responsible for the detailed planning and the design of a built-in evaluation system for the project.

Time orientation. Project management is considered a permanent activity for top managers for whom the constant renewal of the project portfolio is a vital ingredient to the long-term survival and growth of the organization. The time horizon for a project manager, on the other hand, is dictated by the expected completion date of the project for which he is responsible.

Resource allocation. Top managers are primarily interested in allocating limited resources among competing demands from operational and project activities. Resources are not allocated to a specific project on the basis of its merits alone, but rather in relation to other opportunities for maximizing the long-term return on those resources for the organization as a whole. Breaking down a project portfolio into the following elements helps put in perspective some of the tradeoffs that senior managers need to make when managing and allocating resources to a portfolio of projects:

$$P = \{p\}_o - \{p\}_c - \{p\}_f - \{p\}_s + \{p\}_n$$

P = portfolio of projects
p_o = on-going projects
p_c = completed projects
p_f = failed projects
p_s = shelved projects
p_n = new projects

On the other hand, a project manager's primary concern is with the efficiency and effectiveness with which a project's resources are allocated to pre-determined or to unforseen tasks.

Conflict resolution. Top managers are those most frequently involved in resolving conflicts between projects of a given portfolio, while project managers are required to resolve conflicts within a given project.

PROJECT CHARACTERISTICS AND PROJECT MANAGEMENT METHODS

A fundamental challenge for senior executives is to develop portfolio project management methods which enable an organization to carry out successfully projects whose individual characteristics call for specific management methods. The following project characteristics (see Table 2) have been found to play a determining role in shaping top management approaches to project management:

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Table 2

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Project size.

As the size of projects undertaken by an organization grows, so does the infrastructure required

(measured by the number of staff and the number of expertise specializations involved, the financial commitments or the level of technical difficulty) and the higher the level they link up with in the hierarchy. In order to respond better to the unique and differing challenges posed by smaller and larger projects, some firms implemented two different sets of project management systems. Systems that apply to small projects tend to rely on elaborate and detailed policies and procedures, while those that apply to large projects tend more to rely on broader sets of guidelines.

However, we also found that a number of the firms which discriminated between small and large projects were far more effective in managing the larger projects than the smaller ones. A typical example is that of a company where small projects were assigned to junior managers who derived little recognition or status from their involvement and received little top management attention and support. As one firm in our study discovered, this can become detrimental to the large projects, to the smooth operation of the organization as a whole and to the development of a strong cadre of project managers.

Project impact.

The greater the impact of a project on its users-clients, the greater the need for participatory and informal management structures. Project management is a political process indeed, hence the need to involve key stakeholders in the decisions which affect them. This is particularly true at the design stage.

Project ambiguity.

The greater the ambiguity and uncertainty in a project's objectives and functions, the greater the need for feedback mechanisms at shorter intervals, for increased speed of experimentation, for the breaking up of the project into smaller phases to allow for partial modifications or reversibility, for

incremental approaches and for intensive communications.

Project complexity.

Project complexity impacts the degree of modularization and the degree of centralization appropriate to its successful management. The analysis of project management practices in the organizations studied has highlighted two important dimensions of project complexity: complexity in project structure and complexity in project execution.

Dealing simultaneously with these two dimensions can create conflicting demands for top management. On the one hand, the greater the complexity in structure, measured by the number of elements constituting a project, the greater the pressure to break the original objective into multiple sub-systems, and therefore to decentralize the management of each module. On the other hand, the greater the complexity in execution, measured by the complexity of the interactions between the elements constituting the project, the greater the need for a quick dissemination of information, for quality communications and, therefore, for centralization. Achieving a manageable balance between these conflicting pressures requires considerable judgement and skill.

Project position in the life cycle.

The data from our case studies confirm previous empirical findings that time is the best dimension on which to structure the observation, analysis, and management of projects. Since each phase of a project (identification, conception, execution and termination) has a unique set of objectives and conditions, each phase implies a unique combination of key tasks, implemented by a different set of focal actors, according to a distinct process which defines the sequence in which these tasks need to be carried out, and all of these are linked by a unique set of organizational arrangements and structure.

All along the cycle, management controls and monitors a project's progress through careful attention to the project's scope, delays, costs and performance levels. Management systems need to emphasize conflict resolution processes and the smooth transition, with adequate support, from phase to phase.

Project strategic importance.

How high a project ranks on the organization's agenda often supersedes all the preceding factors in determining the amount of visibility and managerial attention it receives. Top managers may sponsor projects which do not meet the normal criteria (e.g. ROI, payback) because they are deemed of strategic importance to the future well-being and profitability of the organization. Such projects may not follow established procedures. Typically they require more frequent feedback to top management and are subject to different resource allocation criteria.

The project portfolio management task is made all the more complex in that it needs to accommodate simultaneously the challenges, problems and constraints created by multiple combinations of such project characteristics. Firms seem to adopt one of two pragmatic responses: to place a heavy emphasis on the project screening process and to select only projects that it knows how to manage, the rationale being that managers can always decide not to undertake a project but cannot decide not to manage on-going operations; or to adapt management continuously to the circumstances created by a given combination of project characteristics.

TOP MANAGEMENT APPROACHES TO PROJECT MANAGEMENT

Key tasks and roles

Definition of general philosophy. In defining an organization's goals, objectives, and strategic orientation, top management sends signals expressing its expectations and priorities. These signals are reinforced by organizational arrangements such as the planning process, the resource allocation process, performance measurement systems, etc. In some companies top management clearly makes a strategic decision in deciding what proportion of funds is allocated to offensive vs maintenance or replacement projects. Thus, top management influences the number and the kinds of projects initiated and undertaken.

Top management has also been found to play a key role in influencing the actual management of projects by either establishing basic project principles that all managers need to conform to, or, in the case of very large projects, defining the specific approach to a contract.

By providing and communicating a clear set of organizational objectives, some top managers try to sensitize the whole organization so that everyone will recognize that it is his/her responsibility to submit project ideas.

Selection of key people. Among the key players top management may want to assign or approve are project managers, partners, negotiating team, consultants. Even in firms which rely to a large extent on outside expertise, top management will assign the project management function to an insider who represents the owner, who is familiar with the organization, and who knows where and

how to obtain information and approvals. The rationale is that learning those skills would be too costly and time-consuming for an outsider.

Screening and selection of projects. No general patterns emerge here. In some cases a project will need the concurrence of all functional areas of the organization (personnel, finance, marketing, production, etc.), while in other cases only relevant people will be consulted. In still other cases the number of inputs will be kept to a minimum in order to avoid unrealistic specifications. For manufacturing firms, early screening is based on strategic fit and quick assessment of financial data to determine whether an in-depth feasibility study is justified or not.

Resource allocation. Key resources can be allocated in two ways:

- through an envelope formula, and it is up to a manager who receives it to decide how the envelope should be allocated first, among on-going operations and projects and second, between projects;
- directly to a project.

Whatever the approach, it is essential that the process be clear and perceived to be fair by the organization. The latter is achieved by either specifying the criteria and the process through which projects are going to be prioritized, or by setting mechanisms for appealing resource allocation decisions.

An important mechanism in shaping project proposals is the capital appropriation request, through which top management can shape the kinds of projects which are eventually submitted as managers learn over time which projects are supported and to what extent, and which are not.

Support to project activities. One firm, operating in a highly cyclical industry has implemented an interesting concept to shelter its projects from the impact of fluctuations in cash flows. Its strategy is to select four major projects at any given time, with the understanding that three projects will be fully funded while the fourth one, the swing project, will absorb the fluctuations. This can be very frustrating for the project manager who needs to continuously adjust his schedule. But should it become clear that that project is going to succeed, it becomes a priority project and another project will take its place as the swing project.

Many senior executives consider that an important role they play in this regard is to promote cooperation between groups on different projects. Their objective is to see cooperation take place without their having to resort to rules or sanctions.

Management of transitions in project phases. Top management closely monitors transitions from one project phase to the next. It structures the rules which guide the decisions on when (at what conditions) and how transitions should take place, and it makes sure that all the necessary support is provided to the team that inherits the project. A key concern among top managers is integration. This includes integration of the various phases of a project as well as integration with operational activities that need to be carried out simultaneously.

Interface with key stakeholders. Some interfaces, critical to a project's success, simply cannot be delegated. For example, in response to a trend among larger manufacturing firms to cut significantly their engineering staffs and to rely on outside consultants, some senior executives make it a point to meet periodically with a contact person in the consulting firm "to avoid surprises and keep the pressure on".

Management development. Performance in project management is used as a criterion to identify good managers. Different top managers have different ways of doing the same thing, such as giving considerable autonomy to the managing of a project, or providing fewer resources than required and seeing how the manager deals with that constraint.

In one particular company, the president developed a compensation scheme and a promotion policy which rewarded people for submitting and sponsoring project ideas. The only way to increase authority and power in that organization was through the submission of good project ideas.

Control and monitoring. In major international engineering projects, some firms have found it essential to agree with all parties involved on the selection of outside auditors and on a schedule for project evaluations. This approach provides top management with an objective assessment of project progress, and at the same time with a weapon to resolve potential conflicts with the partners or the client. In companies which call on outside consultants for the conception of a project, top management has periodical meetings with a representative from the consulting firm. In one company, top management requires that the consultants commit themselves to assigning the same executive for the duration of the project.

Rules, systems of rules and meta-rules.

Although no two projects are alike, all projects share a number of characteristics in common. These common characteristics form the foundation of the systematization of project management methods and techniques in a single body of knowledge. The data for our study suggest that in practice, at any given time, a limited number of variables appear to shape the general approaches to project

management adopted by an organization.These are the number and the homogeneity of projects undertaken. These two factors determine the appropriateness of one of the four project management methods: (i) ad hoc approaches, (ii) detailed rules and procedures, (iii) various systems of rules and procedures and (iv) meta- rules (see Figure 1).

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Figure 1

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The following typology of project management methods results:

When few projects are undertaken, learning becomes impeded or impossible. Thus, in such cases project management systems are commonly imported (subcontracted to an engineering consulting firm, or duplicated from another firm by, for example, hiring a project manager from a competitor), or simply created by an individual with organizational project management capabilities.

When a large number of relatively homogeneous projects are undertaken, it becomes possible to specify and apply effectively detailed rules and procedures applicable to all projects. In such cases, project management manuals can be prepared and are extremely useful. In this scenario project management becomes an exercise in administration where strict adherence to the system is expected and required.

When many heterogeneous projects are undertaken, top managers have two options. First, they can classify the projects into homogeneous sub-groups and develop a standardized system for each segment of the project portfolio, which brings us back to the preceding case but multiplied by the number of groups constituted. Thus, project management methods can be classified as independent systems of rules and procedures. Each system, relevant to its own set of circumstances, is implemented within the organization's overall strategic constraints and is, therefore, subject to the

strategic priorities set by top management and to their resulting tradeoffs. In this regard, a distinct challenge for top management is the integration of the various groups, each characterized by its own project culture and idiosyncracies.

Second, when many heterogeneous projects cannot be classified into homogeneous categories top managers need to define meta-rules, i.e., rules which generate their own system of rules and procedures in response to the specific and unique circumstances surrounding each project.

The notion of global directive, or meta-rule, is replacing that of detailed procedures. It has led to a new management style founded on the utilization of general guidelines implemented by autonomous project managers wholly accountable for a project's success. In this system, a project manager needs to interpret and apply the guidelines to the unique circumstances of a project. His own performance is then assessed by an independent corporate audit team whose main responsibilities are to ensure that all guidelines have been followed and to assess the quality of the project manager's judgement in adapting them to a project.

Spie Batignolles was the first company to make public the replacement of voluminous manuals of procedures by a new set of guidelines presented in pocket diary format. The implementation of the new project management philosophy had been triggered by the difficulty of applying procedures to projects for which they had not been designed. Following an era of unending revisions, each revision leading to its own revision and so forth, the size of the project management manuals had become so monumental and so inversely proportional to their usefulness, that senior management questioned their existence. The seventeen rules for successful project management contained in the booklet were derived from an in-depth review of over a hundred successful and unsuccessful projects.

In practice, the larger organizations tend to rely on a system where a combination of approaches co-exist to better respond to the specific needs, constraints and challenges of various segments of the portfolio of projects, all at different stages in their life cycle.

CONCLUSION

The development of project management practices and concepts is at an historical turning point. It is now clear that project management technology needs to be embedded in an organization's strategic management system. Because this conclusion has been reached at the same time by two currents of thought -namely project management and strategic management- both grounded on management practice but starting from very different perspectives and premises, its power and relevance are all the more convincing.

On the one hand the discipline of project management moved from a narrow to a broader concept embodied in the PMBOK which explicitly recognizes the existence of a professional body of knowledge pertaining to project management that applies across all types of projects. While on the other hand, the discipline of strategic management is finding that the formulation and implementation of strategies needs to integrate a sound understanding of how to manage strategic projects and even further, each and every project.

In an increasingly competitive world, project management competence is emerging as a key success factor of the same magnitude and with the same potential impact as the marketing function had in the 1950's. Project management is no longer in its infancy. However, it is not yet a mature discipline either. Better and more refined models need to be developed to explain project success and failure,

and therefore to improve project management practice. The integration of project management practice in a strategic management framework is an important step in that direction.

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FIGURE #1

TYPOLOGY OF PROJECT MANAGEMENT SYSTEMS

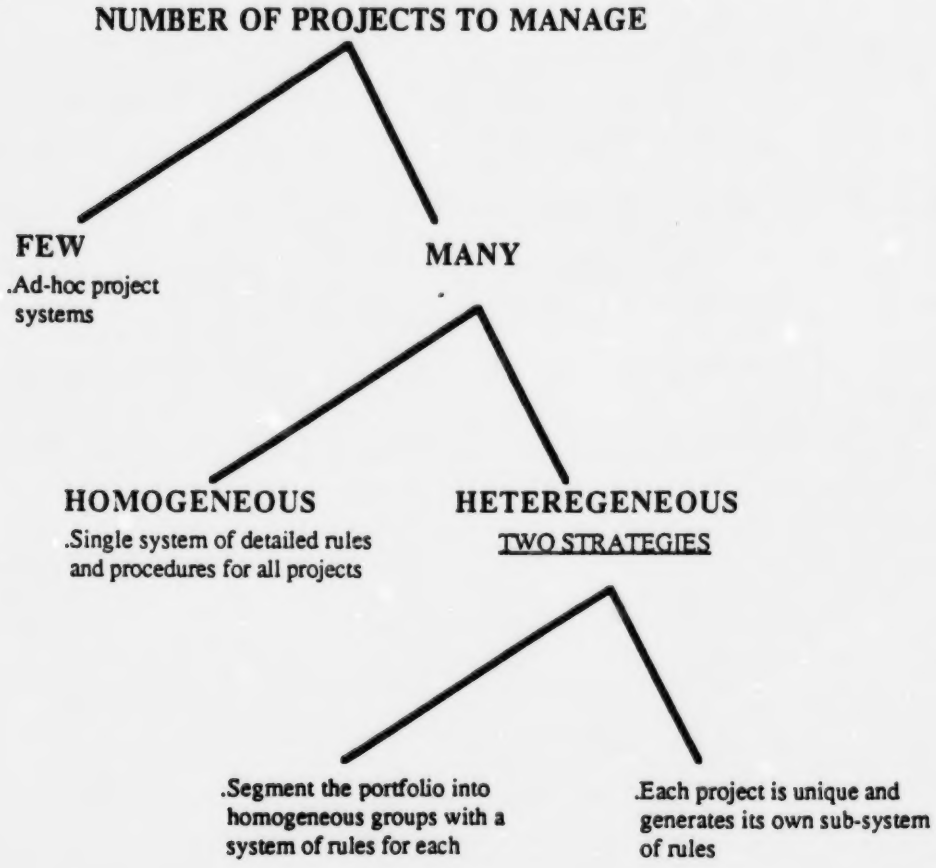
NUMBER OF PROJECTS TO MANAGE
FEW
.Ad-hoc project systems
MANY
HOMOGENEOUS
.Single system of detailed rules and procedures for all projects
HETEREGENEOUS
TWO STRATEGIES
.Segment the portfolio into homogeneous groups with a system of rules for each
.Each project is unique and generates its own sub-system of rules

TABLE #2

PROJECT MANAGEMENT MODEL

PROJECT'S CHARACTERISTICS	PROJECT MANAGEMENT SYSTEMS
SIZE →	.Infrastructure requirements: staff, outside expertise, cash flow, level of technicality .Hierarchical level of control
IMPACT →	.Greater involvement of users-clients in decision making .Need for participatory and informal structures
AMBIGUITY & UNCERTAINTY →	.Need for feedback mechanisms, for increased speed of experimentation, for multiple phases to allow for partial reversibility, for incremental approaches and intensive communication
COMPLEXITY →	.Pressure to break the original objective into multiple sub-systems .Need for quick dissemination of information for quality communications .Need for centralization & modularization
PROJECT LIFE CYCLE →	.Control progress of every project .Management of conflicts .Management of transitions from phase to phase
STRATEGIC IMPORTANCE →	.Screening and selection of projects

TABLE #1

DETERMINING FACTORS IN PROJECT MANAGEMENT : THE MANAGEMENT OF A PROJECTS` PORTFOLIO VS THE MANAGEMENT OF A SINGLE PROJECT

	PORTFOLIO OF PROJECTS	SINGLE PROJECT
ORGANIZATIONAL LEVEL	.Vice-presidents .Division general managers	.Project manager
KEY GOALS	.Overall performance of the projects` portfolio	.Time, Cost, Quality
STAFFING	.Selection of projects managers by top level managers	.Selection of the project team by the project manager
PLANNING TASKS	.Global formulation of projects goals and objectives .Overall planning and control	.Detailed formulation of project goals and objectives .Continuous planning and control of the project
TIME ORIENTATION	.Long-term: Permanent management of constant flow of temporary activities	.Short-term:Management of temporary activities
RESOURCE ALLOCATION	.Allocation of limited resources among a portfolio to maximize its long-term return	.Efficient and effective allocation of resources to the project
CONFLICT RESOLUTION	.Resolution of conflicts between projects	.Resolution of conflicts within a project

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